ILLINOIS SUSTAINABLE TECHNOLOGY CENTER
PRAIRIE RESEARCH INSTITUTE

Fact Sheet

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Executing a Successful Lighting Changeover Project
A Bright Idea

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Abstract

This fact sheet documents the challenges, potential pitfalls, energy savings, and incentives associated with a lighting project and will help companies successfully change over to more energy efficient fixtures.

Lighting- *"It's in plain sight, yet no one really sees it."*

Most industrial facilities don't know how much it costs to light their facilities. Lights either work or they don't. If a lamp burns out, it is quickly replaced with a new lamp just like the old one without much thought to the efficiency of the lighting system. After all, somebody else pays the utility bill. It's overhead, yet out of sight and out of mind.

Get a Pro

Lighting may seem simple enough. After all, "it's only light, right?" Individual lighting components may be simple, but lighting systems are complex. A systems approach looks at what, how, where and why lighting is used. Consult with professional lighting representatives, contractors or consultants who have a proven lighting record, and only work with those who have earned your respect and trust. Changing over lighting is a big and costly decision, so it should be considered with care, because you have to live with the consequences.

Compare Apples to Apples

Lighting professionals should conduct a thorough lighting assessment, which will consist of an inventory of the function and environment of all light fixtures, including: overhead lighting in the plant and offices; task lighting; exit lighting; and exterior and specialty lighting. The inventory will list the location, type, quantity, wattage, and hours of use. The assessment proposal should quantify fixture number and type, light level (foot candles), density (watts/ft^2), annual energy consumption; and operating cost of the present lighting system. It should also compare the existing system to their proposed alternative in the following areas: lighting cost (equipment, installation and disposal); annual energy savings ($ and kWh); greenhouse gas reduction (carbon dioxide); and payback or return on investment (ROI).

When soliciting multiple requests for proposal (RFPs), ensure that each professional is provided with the same project scope, parameters, and requirements. Variations in fixture inventory, fixture brand/model/grade, accessories and controls, wattage, utility rate (blended vs. base), and operating hours may inhibit side-by-side comparison of proposals. Look for these variations when comparing proposals. If you find them, don't be afraid to ask for clarification. It's better to address these issues before the project starts.

Test Drive the Fixtures

Would you buy a new car without driving it first? You should do the same with lighting. Don't rush into a commitment. Request **several** free demo fixtures from the finalist(s) and install them in multiple locations and applications, noting before and after conditions of the area. Not all lights are the same. With global manufacturing, fixtures vary greatly in construction, appearance, quality and price. Have a maintenance or technical person go over the fixture to observe general construction, durability, diffuser, reflector, ballast, ballast location, heat displacement, electrical wiring, and installation hardware. How easy are the fixtures to service, relamp or clean?

The Results Are Illuminating

Figure 1 shows a facility midway through a lighting changeover from high pressure sodium fixtures to T8 high bay fluorescent fixtures with occupancy sensors. Changeovers of this type reduce energy consumption 52-56%, while improving the quality of light, as noted in this photo. The company gets better light for less money.

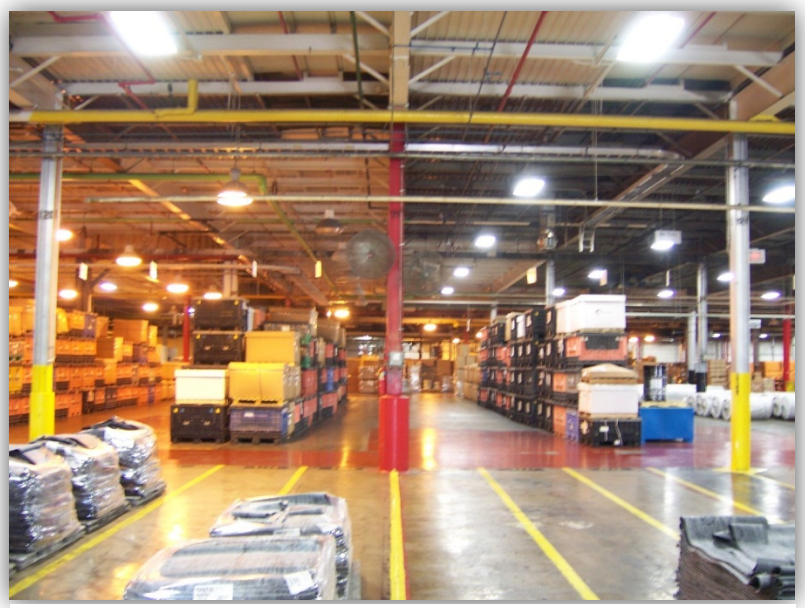

Figure 1

Comparison of high pressure sodium lighting on the left and T-8 fluorescent 5000 degree Kelvin lighting on the right.

Show Me the Money

The State of Illinois' Energy Efficiency Portfolio Standard (EEPS), signed into law in 2007, requires Illinois utilities to reduce overall electric usage by 2.0% by 2015. This law created a substantial budget for ComEd, Ameren, and Illinois Department of Commerce and Economic Opportunity (DCEO) to provide energy efficiency incentives, which reduce energy usage and demand. ComEd and Ameren maintain a list of Program Allies, registered contractors who agree to work with companies referred by the utility. Working with a qualified program ally ensures that you meet incentive program qualifications, requirements and deadlines. Each utility has a searchable list of lighting professionals.

State incentives may be supplemented with other federal incentives. These incentives, combined with annual energy savings, can substantially reduce simple payback periods and increase project implementation.

State

The following organizations provide lighting and other energy efficiency incentives to Illinois businesses:

Ameren: Act On Energy
http://www.actonenergy.com

ComEd: Smart Ideas for Your Business
http://www.comed.com

Department of Commerce and Economic Opportunity (DCEO) Illinois Now Public Sector Energy Efficiency Program
http://www.illinoisbiz.biz/dceo/Bureaus/Energy_Recycling/Energy/Energy+Efficiency/

Illinois Municipal Electric Agency (IMEA) Electric Efficiency Program
http://www.imea.org/

Federal

The Federal Energy Policy Act of 2005 offers tax incentives to both individuals and businesses for energy efficiency related improvements. The Emergency Economic Stabilization Act of 2008 (HR-1424), was approved and signed on October 3, 2008, extends the benefits of the Energy Policy Act of 2005 through December 31, 2013.

One of these incentives is the **Energy–Efficient Commercial Buildings Tax Deduction**, which offers a maximum deduction of $1.80 per square feet of space for specified energy efficiency improvements (building, HVAC/water and lighting). For more information on this deduction, see http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=US40F&State=federal&currentpageid=1&ee=1&re=1.

For a complete list of federal incentives and policies, see http://www.dsireusa.org/incentives/index.cfm?state=us&re=1&EE=1.

The Final Word- Disclaimer

ISTC has helped numerous Illinois business through the lighting changeover process and have observed failures when facilities rushed a structured process or took short cuts. Following the above recommendations will not guarantee a problem-free project but should save energy and resources, reduce common mistakes and pitfalls, and lessen the anxiety and frustrations associated with lighting changeover projects. ISTC does not endorse, either explicitly or implicitly, any particular manufacturer, vendor, product or service. Information is provided for reference only.

For More Information

Additional ISTC fact sheets covering energy efficiency, water conservation and pollution prevention are available at www.istc.illinois.edu.

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